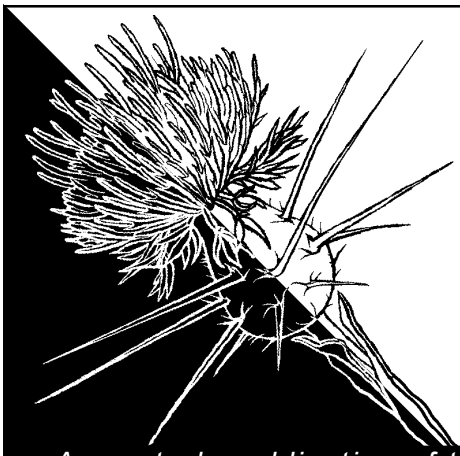
Volume 2, No. 3, Winter 2000



Noxious Times

A quarterly publication of the California Interagency Noxious Weed Coordinating Committee

In this issue...

Weed Management Computer and Information Technology Workshop Slated for May 2000

Early Call for Presentations and Participants

The number of weed control personnel and researchers making use of information technology in California has exploded over the last few years. Technologies include: invasive species databases, Geographical Information Systems (GIS), Geographical Positioning Systems (GPS), remote sensing, websites, and expert system technology. Despite an exponential increase in activity, no attempt has been made to bring practitioners, developers, and researchers together to coordinate, share information, and explore the wider potential for statewide information systems. Hence, planning is underway for just such a meeting. A preliminary list of workshop activities includes: (1) hands-on GIS training, (2) demonstrations by remote sensing and GPS experts; (3) short presentations on existing projects in California, (4) a session on current research and successful remote sensing projects in other states, and (5) a forum on how to best coordinate projects and users at a statewide level. While still in the preliminary stages, the workshop is tentatively scheduled to take place in early May, 2000.

Anyone interested in presenting, participating, sponsoring, or being on the steering committee is encouraged to contact Steve Schoenig at sschoenig@cdfa.ca .gov, (916) 654-0768

Environmental Mitigation and Weed Control

In 1994, Paul Fransen of Riverside County Parks and Open Space worked with the USFWS to establish a mitigation bank in the Santa Ana River watershed. This allowed them to fund their arundo removal efforts by selling mitigation credits. Mitigation is one mechanism by which weed control is being done in both in California and nationwide.

What are mitigation credits and banks?

According to the California Environmental Quality Act (CEQA), mitigation is required whenever actions occur which result in significant environmental impact. Impacts include conversion of land to urban uses, and in some instances agricultural uses. Impacts can also include disturbances that are mostly temporary in nature, like logging or bridge restructuring. Mitigation under CEQA can include the reduction of environmental impact, the restoration of an area after an impact has occurred, or "compensating [for impacts] by providing substitute resources or environments" (CEQA Guidelines Section 15370). Under the Clean Water Act (Section 404), the Federal government has specific guidelines for the mitigation of impacts to wetlands. The US Fish and Wildlife Services also has mitigation requirements for impacts to endangered species under the Endangered Species Act (ESA).

Mitigation requirements vary from county to county, and from agency to agency. Mitigation is measured in *credits* which are habitat or species units. Mitigation work is credited as a function of the amount enhancement done, or the quality of the area restored or preserved— not just acre for acre. An example of this involves weed removal in San Diego County. Wildlands Inc., a private

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CINWCC Signatory Agencies and Representatives

California Agricultural Commissioners and Sealers Association
Mark Quisenberry (530) 822-7500
California Department of Food and Agriculture
Nate Dechoretz (916) 654-0768
Steve Schoenig (916) 654-0768
California Department of Transportation
Larry Shields (916) 654-4329
California Resources Agency
Bonnie Turner (916) 445-9992
Department of the Army, U.S. Corps of Engineers, South Pacific Division
Phil Turner (415) 977-8058
Joe Holmberg (916) 557-5281
U.S. Department of Agriculture, Natural Resources Conservation Service
Dave Dyer (209) 727-5319
U.S. Department of Agriculture, Animal and Plant Health Inspection Service
Dan Hamon (916) 857-6258
U.S. Department of Agriculture, Forest Service
Cheri Rohrer (415) 705-2545
U.S. Department of Defense, Air Force
Mary Lamb (415) 977-8851
U.S. Department of Interior, Bureau of Indian Affairs
Dale Morris (916) 978-6051
U.S. Department of Interior, Bureau of Land Management
John Willoughby (916) 978-4638
Shane Barrow (916) 985-4474
U.S. Department of Interior, Bureau of Reclamation
Jim Scullin (916) 978-5038
U.S. Department of Interior, Fish and Wildlife Service
Scott Stenquist (503) 231-6172
U.S. Department of Interior, National Park Service
Curt Deuser (702) 293-8978
Mietek Kolipinski (415) 744-3870

Active Stakeholders

California Association of Nurserymen
Jack Wick (916) 928-3900
California Cattleman's Association
Ken Zimmerman (562) 866-1400
California Exotic Pest Plant Council
Jake Sigg (415) 731-3028
California Native Plant Society
Jake Sigg (415) 731-3028
The Nature Conservancy
John Randall (530) 754-8890
U.S. Department of Agriculture, Agricultural Research Service
Ray Carruthers (510) 559-5800
Joe Balciunas (510) 559-5975
University of California
Joe DiTomaso (530) 754-8715

Chairwoman's Message:

Cheri Rohrer

In October, CINWCC co-sponsored a Statewide Weed Education Workshop. The workshop was well attended and will hopefully lead to increased education activity throughout the state (*see article on page 9*). I would like to thank the California Department of Food and Agriculture for organizing the meeting.

MARK your calendars, **next CINWCC meeting, January 27th, 2000** ***1PM at the Forest Service's new Regional Office on Mare Island, Vallejo.*** I am looking forward to a successful meeting--- a tentative meeting agenda is included below. SEE you there!

Tentative Agenda Items, January 27th, 2000

Invited guests

-Randy Westbrooks USDA will speak on invasive species councils

-Dr. Jim Quinn (UC Davis) will speak on invasive species information systems

Agency Reports including:

- Ag commisioners: weed free forage certification, invasive nursery stock sub- committee.

- CalTrans: spray program reductions

- CDFA: AB1168/Weed Management Areas; Sierra yellow starthistle mapping project; weedlist additions; Salvinia; Purple loosestrife; Pesticides and Water Quality Control Boards; WOW grant RFP

- USDA-NRCS: Lockford Plant Materials Center vegetative suppression

Noxious Times is a publication of the California Interagency Noxious Weed Coordinating Committee. The committee was formed in 1995 when 14 federal, state, and county agencies came together under a Memorandum of Understanding to coordinate the management of noxious weeds. The committee's mission is to facilitate, promote, and coordinate the establishment of an Integrated Pest Management partnership between public and private land managers toward the eradication and control of noxious weeds on federal and state lands and on private lands adjacent to public lands.

The *Noxious Times* newsletter intends to help the committee achieve its goals of coordination and exchange of information by providing land managers throughout the state with information on weed control efforts, news, and successes.

Noxious Times is published quarterly by staff of the Integrated Pest Control Branch at the California Department of Food and Agriculture. We welcome submissions for our upcoming issues. Please send to: CA Department of Food and Agriculture, ATTN: Noxious Times, 1220 N Street, Room A-357, Sacramento, CA 95814 or e-mail: noxtimes@cdfa.ca.gov

If you have a colleague whose name you would like to add to our mailing list, please send mailing information to the address above.

Noxious Times Editorial Staff: Carri Benfield, Steve Schoenig, Ivan Sohrakoff, and Rosie Yacoub. Text written by staff unless otherwise noted.

Where to Have Weeds Identified by Trained Botanists

Proper Weed Identification is Key to a Successful Program

The Situation: An odd looking plant is found growing on the side of the road, on a back-country trail, or in a newly constructed site. What is the plant? Where can you go to have it identified? Some people might rely on photo-based field guides such as "Weeds of the West," while the more ambitious might attempt keying out a given species with the "floristic bible", The Jepson Manual. Given the vast diversity of California's flora, this task can be daunting. The alternative would be to send a sample in for identification by a trained botanist.

Importance of proper identification: Informed management decisions rely heavily on what species or *species compositions* are present. Species specific characters such as: life cycle (annual or perennial), reproductive mode (seed, vegetative parts), and growth form are critical in assigning appropriate control and restoration treatments. Time and again, situations exemplifying the importance of having a weed professionally identified present themselves. Trained Botanists and Taxonomists have access to libraries of specimens (herbaria) and experience using them both properly and effectively.

Where to go?

Many established weed identification sites are available throughout the state. The following list of professional plant taxonomists is a great resource when compiling a species inventory in your county, at your preserve, or on your property.

County Agricultural Commissioner's Office

Ag Commissioners' responsibilities include carrying out county-wide programs for both pest detection and weed & vertebrate pest management. All counties throughout the state have biologists that are knowledgeable in local invasive and noxious weed identification and control. County biologists send samples on to the CDFA Pest Diagnostic Lab for I.D. confirmation. *To find your County Ag Commissioner, see www.cdfa.ca.gov/counties/*

Farm Advisor's Office

Through University of California Cooperative Extension a network of farm advisors extends throughout the state. Farm advisors work with farmers, processors, and other agricultural operators, as well as local governments, regulators, and the environmental community. Counties have both crop and non-crop farm advisor specialists trained in a wide array of fields, including weed identification and management. Farm Advisors send smaples to the UC Davis Herbarium for I.D. confirmation. *To find a Farm Advisor near you, www.cdfa.ca.gov/counties/*

California Department of Food and Agriculture, Plant Pest Diagnostics Branch

California Department of Food and Agriculture, Plant Pest Diagnostics Branch Taxonomists at the Plant Pest Diagnostics Branch are mandated to identify pest plants sent in by CDFA and County Biologists. Plant identification is an integral part of weed pest exclusion, detection, control, and eradication. Seventy-five percent of the counties submit 90% or more of their plant specimens to the Botany Laboratory for identification or confirmation. The ability of the laboratory to assist field programs promptly and accurately has aided in pinpointing the distribution of the major weed pests in the State. In 1998, the Botany Laboratory made 1,323 plant identifications and provided more than 500 consultations. Contact: CDFA Senior Plant Systematist, Fred Hrusa, fhrusa@cdfa.ca.gov

UC Davis Herbarium

Taxonomists at the UC Davis Herbarium are mandated to identify [pest] plants sent in by UC Cooperative Extension and University researchers. They also perform this service for the general public. The identification of small lots of specimens is done free of charge; for larger lots, there is charge per identification. Any member of the public may consult the herbarium's plant collections, library, and slide collection. During the 1998-99 fiscal year, herbarium staff performed over 500 plant identifications, filled over 200 information requests, and welcomed over 700 visitors. Most off-campus users, including UC Cooperative Extension farm advisors, consult the herbarium by phone, mail, or email. *Contact: UCD Herbarium Curator, Ellen Dean, (530) 752-1091, eadean@ucdavis.edu.*

A Local University, Botanical Garden, or Herbarium Near You

There are many locations throughout the state where professionally trained botanists/taxonomists can make identifications. However, these identifications are made on more of a voluntary basis and therefore availability of site I.D. will vary pending staffing and resources. Locations include herbaria and facilities at: Universities, State Universities, and Botanical Gardens (UC Riverside, UC Berkeley, Chico state, Humboldt, Santa Barbara Botanical Garden, Cal State Stanislaus, Fresno State, amongst others).

*Resource Guides**

As stated in the article, it is important to get species identifications confirmed by trained professionals. Photo guides are often incomplete, not representative of variation, and lack full physical descriptions.

Lay Person/Amateur Botanist

- Weeds of the West
- UC Pest Notes, a UC weed I.D. notebook
- Weeds of California's Wildlands (*due out March of 2000*)
- Weeds of California (*expected by 2003*)
- Local floral guides *such as Pacific States Wildflowers*

Professional Botanist

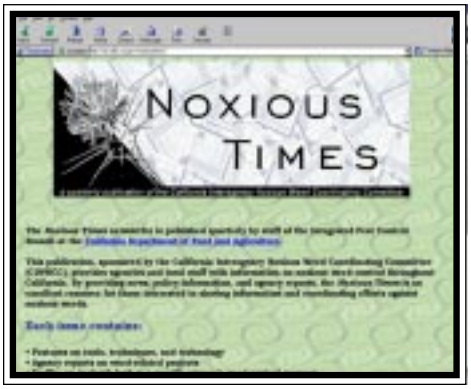
- A Flora of California *Munz & Keck*
- Jepson Manual-Higher Plants of California *Hickman, ed.*

Find this list of resource guides continued & general collecting and pressing tips at the Noxious Times **Website, Winter 2000 issue, Vol. 2, No. 3, pages 17-18.*

CalEPPC and Professional Taxonomists Collaborate for Future Collections

The California Exotic Pest Plant Council and both the UC Davis Herbarium and CDFA Plant Pest Diagnostics Lab recently announced a collaborative effort to further facilitate proper weed identification. For this service, a specific protocol was devised to ensure that samples are of archival quality. Such records preserve both collection data and a pressed specimen that will serve as a lasting record or slice of floral history that can be viewed and used by the general public and scientific community for many years to come. Data sheets for plant collections have been developed and can be viewed at the *Noxious Times* **website**, www.cdfa.ca.gov/noxioustimes, *Winter 2000,* Vol. 2, No. 3, pages 17-18. A list of general tips useful in collecting and pressing samples can also be found at this website location.

Weed Related Web



New Noxious Times Website!

www.cdfa.ca.gov/noxioustimes

The Noxious Times website has recently been refurbished, polished, and generally updated. The site now has downloadable PDF files of each Noxious Times issue, as well as a link to Adobe's site (you need Acrobat Reader to read PDF files). These issues are fully printable, including pictures and graphics. A list of articles for each issue enables the viewer to get an idea of the content of an issue before downloading (which takes anywhere from 10 seconds to 6 minutes).

New California Weed Management Areas Website!

www.cdfa.ca.gov/wma

Check out the new WMAs website, recently updated with a clickable map of California's Weed Management Areas. Click on a WMA, and you will be taken to its respective webpage. These pages are currently under construction (Click on Lassen County to view a completed page). Soon, each Weed Management Area will have oodles of information available on their page. For more information, contact Ivan Sohrakoff at: isohrak@cdfa.ca.gov.

California Exotic Pest Plant Council (CalEPPC)

http://www.caleppc.org/

Pest Plant List: Exotic Pest Plants of Greatest Ecological Concern in California
The CalEPPC website highlights their new (1999) Pest Plant List, available as a PDF file for printing (requires Adobe Acrobat Reader). The list is based on information submitted by CalEPPC members, land managers, botanists, researchers, and published sources. The 12-page document highlights non-native plants that are serious problems in wildlands. List categories include:

List A: Most invasive wildland pest plants.
List B: Wildland pest plants of lesser invasiveness.
Red Alert: Pest plants with potential to spread explosively.
Need More Information: Plants for which current information does not adequately describe nature of threat to wildlands.
Annual Grasses: A preliminary list of annual grasses, abundant and widespread in California, that pose significant threats to wildlands.
Considered But Not Listed: Plants that do not appear to pose a significant threat to wildlands.

CalEPPC Newsletters
Also downloadable (in PDF format) from the CalEPPC website are their quarterly newsletters (Summer '96- Winter '99). Article titles from each newsletter can be viewed before downloading a whole issue.

Links
The CalEPPC website features links *with brief descriptions*. This is a handy feature when surfing their links. The links are separated into eight categories: Other EPPC Websites, California, Other States, Federal, Organizations, Restoration, Weed Control, and Other Interesting Sites.

Other Website Features
The CalEPPC home page also lists its board of directors, membership information, working groups, symposia, and urges the viewer to give them feedback. The site uses frames, which ease the flow between pages. Adobe Acrobat Reader, which is needed to download pest plant lists and newsletters, is linked to CalEPPC's site and is easily obtainable.

California Noxious Weed Control Projects Inventory (Calweed Database)

http://endeavor.des.ucdavis.edu/weeds

List of Weed Related Projects
The Calweed Database provides an Internet accessible database, acting as a clearing-house for noxious weed control projects in California. The database contains information on who is controlling which noxious weeds in California, and what methods they are using. A list of weeds that can be entered into the database is also provided.

Information About the Projects
The Calweed Database links the projects to a standard form (filled out by each specific project), with the following headings: Abstract, Purpose, Weed Target, Control Method, Project Information, Lead Agency, Funders, Landowners and Cooperators, General Information, Vegetation Types, Geographical Information, Species Information, Species Targeted for Eradication, Species Introduced During Restoration, and Contact Information. Project information is scheduled for update within the upcoming year.

Project Searches
Projects can be searched by entering a weed target, county name, or type of control method. Projects can be browsed by the type of control method, (chemical, cultural, fire, mechanical, grazing, or biocontrol).

Downloadable Entry Forms
To add a project to the database, an entry form must be filled out. Three different formats (Text, MS Word, WP) for the data entry form can be downloaded, as well as instructions.

Links
Major partners for the project are linked, as well as the information on each project.

sites for California

CalFlora Database Project

http://galaxy.cs.berkeley.edu/calflora/

Weed Database
CalFlora Database Project is a collaborative project of the USDA Forest Service, the UC Berkeley Digital Library Project, the United States Geological Survey, the UC Davis Information Center for the Environment, the Santa Barbara Botanic Garden, and others.

CalFlora is a comprehensive database of plant distribution information for California, a web accessible, publicly available tool for synthesis of data from disparate sources. It provides access to information about all 8,375 currently recognized vascular plants in California, including over 670,000 records of plant observations and 20,000 photographs. Users may browse these collections by scientific or common names, or search by name, location, and other attributes. Information about plant distribution and individual occurrences is presented textually and via interactive map capabilities. In most cases the data is publicly available and downloadable.

Species Database
The Species Database provides summaries of geographic distribution, habitat, and lifeform data for the 8,375 vascular plant taxa known to be native or naturalized in California, based on published literature as well as specific documented observations.

Occurrence Database
The Occurrence Database combines 679,155 records of plant observations from multiple state, federal, public and private sources. Information for each record includes scientific name, observation date, location, contributor, documentation attributes, and other information. County distribution maps may be generated on demand showing the reported range of taxa and families, and the portion of the range that is documented by specimens vs. literature reports vs. other reports.

Nomenclature Database
The Nomenclature Database provides information on relationships between plant names as used by various observers, past and present. This serves as a tool for accessing and summarizing occurrence observations as well as providing a stand-alone source of historical information on usage of plant names in California.

Synonyms Database
California Plant Synonymy Table (Experimental) Data compiled by Fred Hrusa, has been experimentally modified in an attempt to translate older scientific names to currently recognized names, or finds synonyms for names in current use. The implementation is now known to have omissions and inaccuracies, but is provided here as a first-draft prototype of a nomenclature service.

Photos Database
As of 1999, more than 80,000 images are available for online searching. The images are the basis for our computer vision research, and many of them are also linked to other online datasets. 19,811 of the 80,000 images are plant photos, mostly California plants, from the Brousseau Collection of California wildflowers, the California Academy of Sciences, California State agencies, and others.

CalFlora Plant Biodiversity Mapping
This real-time map generator, developed by Texas A&M Bioinformatics Working Group, produces maps showing species counts for plant families and genera, as well as distribution maps for individual species. Information is based on CalFlora distribution fields. Texas A&M Bioinformatics Working Group is currently unable to incorporate updates from CalFlora, therefore the maps are now frozen at the last data update from February 1998.

Other website features
The UC Berkeley Digital Library Project/ CalFlora website also features pages discussing what's new, frequently asked questions, staff, collaborators, and plant identification. Sample queries are provided, as well as information on advanced queries, and each database. Links are separated into two categories: "About the flora of California", and "Other online sources."

Other Weed-Related Sites on the Web

Colorado State University
http://www.arapcsuext.org/agri/noxious2.htm

Australian National Weeds Strategy
http://www.weeds.org.au/links.htm

NRCS- Noxious Weeds of North America
http://dogwood.itc.nrcs.usda.gov:90/weeds/index.html

Federal Interagency for the Management of Noxious and Exotic Weeds
http://refuges.fws.gov/NWRSFiles/InternetResources/Weeds.html

California Weed Science Society
http://www.cwss.org/

Western Society of Weed Science
http://www.wsweedscience.org/

Database of IPM Resources (DIR) Internet Resources on Weeds & Their Control
http://www.ippc.orst.edu/cicp/gateway/weed.htm

California Native Plant Society
http://www.calpoly.edu/~dchippin/exotic.html

University of Montana Invaders Database System
http://invader.dbs.umt.edu/

USDA-NRCS, CA State-listed Noxious Weeds
http://plants.usda.gov:80/plants/cgi_bin/state_noxious.cgi?statefips=06

The Nature Conservancy: Wildland Weeds Management & Research Program

http://tncweeds.ucdavis.edu/tncweeds.html

Management Library
The Nature Conservancy's website features a library of information listed by species and common name, including photographs of many invasive species. This library includes downloadable Element Stewardship Abstracts (ESAs), which are complete reports

Continued on Next Page...

Websites continued from page 5...

summarizing many aspects of a plant, including its uses, ecology, and control. The library also features a search engine to locate information on a specific plant.

National Weed Alerts
The Nature Conservancy posts (on their website) advisory bulletins for species that have been newly sighted or are expanding their ranges. Additional information on the species is also linked to its individual advisory bulletin.

Worst Weeds
A clickable map of the United States allows the website viewer to find which wildland weed is particularly harmful in a selected region. If you desire to see more photographs of the worst weeds, a complete inventory of photographs (used on the Conservancy's website) is posted at the bottom of the "Worst Weeds" section.

Tools of the Trade
The Nature Conservancy highlights several knives, lances, and other anti-weed tools which assist mechanical or chemical treatment. This helpful page links each tool with additional in-depth information, including photographs.

Weed World
News in the world of weed control is displayed in this section. This includes conferences, articles, and other weed media.

Other Website Features
Links categories include: US invasives, plant research, and other topics. Also included on the web page are weed control templates, making the process of writing a weed control plan easier.

Weed Research and Information Center (WeedRIC) University of California

http://wric.ucdavis.edu/

Weed Education
The WeedRIC website lists upcoming weed related events, workshops, seminars, and conferences, both UC affiliated and private, as well as past UC weed related events. These lists are linked to other websites which sponsor and provide information about the events.

Aquatic Weeds
WeedRIC provides photographs, as well as information on herbicide susceptibility, biological controls, mechanical harvesting, and habitat manipulation of aquatic weeds.

Integrated Pest Management
The UC Pest Management Guidelines database provides pest monitoring techniques, pesticides, and non-pesticide alternatives for managing numerous pests in agricultural crops, floriculture, commercial turf, homes, and landscapes. The guidelines, written by researchers, specialists, and farm advisors, are updated as pesticide registrations change and new methods become available.

Publications
A link to the DANR online catalog provides a list of pest and disease management publications for sale.

"Pest Notes" for weeds include identification and life cycle, management, chemical use, publication information, biology, mechanical and chemical control, and impact. Some pest notes are available in PDF format, requiring Adobe Acrobat Reader. Also available for PDF download are "Plants reported to be Poisonous to Animals in the United States", and "Weed control material available for homeowners." A weed susceptibility chart (another PDF download) provides a very comprehensive chart of weeds and their susceptibility to various herbicides. Adobe's website is linked for easy access to Acrobat Reader (for viewing PDF files).

Weed Identification
The Integrated Pest Management Photo Gallery provides an easy source for weed identification on the net. Also linked to this site is the Photo Herbarium of the Weed Science Society of America, as well as The Nature Conservancy's invasive species page. Instructions for sending weed samples to WeedRIC (for identification) are also listed.

Weed Science Program at UC Davis
A reference to the UC Davis Weed Science Program features individual links for weed scientists, weed identification, troublesome weeds, poisonous plants, Department of Vegetable Crops, Vegetable Research and Information Center, and other links.

Links
Links are separated into 11 categories: University of CA, Universities, CA State, Other States, Federal Government, International, Agricultural Chemical Resources, Organizations, Specific Weeds, Weeds in Specific Crops, and Miscellaneous.

Search
The WeedRIC website is outfitted with an excellent search engine, capable of searching their whole site.

Weed Science Society of America

http://ext.agn.uiuc.edu/wssa/

Publications
Publications accessible from the Weed Science Society of America website include: Weed Science, Weed Technology, WSSA Newsletters, Abstracts from Weed Science Journal, Abstracts from Weed Technology Journal, Review of Weed Science 1-6, and other WSSA Publications. An order form for the publications is also provided.

Herbicide Information
Information on herbicides is divided into four pages, Herbicide Manufacturers, Chemical Terminology, Government Regulations, and Dead Weed Movies.

Herbicide Manufacturers: List of sites for herbicide labels, Chemical Pedigree Chart, MSDS sheets, and maps of agrochemical use.
Chemical Terminology: List of herbicides and their chemical names.
Government Regulations: List of sites and documents relating to food and pesticide safety.
Dead Weed Movies: Time lapsed photography of herbicide action on plants.

Weed Information
WSSA divides weed information into three categories: Noxious Weeds, Plant Names, and Herbicide Resistance.

Noxious Weeds: Documents on some noxious weeds and related items.
Plant Names: Unofficial access to WSSA composite list of weeds.
Herbicide Resistance: Further information in regards to herbicide resistant weeds.

Links
Links are separated into four categories: Governmental and regulatory links, commercial links, non-profit organizations, and educational institutions (which are split into foreign schools and domestic schools within USA and Canada).

Other Website Features
The WSSA website also features meeting programs, Society information, and a photo herbarium database of over 200 common American herbs, plants, and weeds. ❖

TOOL BOX: *EZ-Ject® Lance*

The TOOL BOX is a new feature which highlights new tools that might integrate well into local weed management tool boxes. The Noxious Times does not specifically endorse tools featured, rather strives to provide baseline data that will lend towards further examination and research on the part of the potential user.

Description: The EZ-Ject Lance is large injection tool (*think "life-size" hypodermic needle*), useful in treating invasive brush and trees. The lance is stainless steel and comes in two lengths: short 4ft , 5lb model holding 180 capsules and long 5ft, 10lb model holding 400 capsules. Job size and density of vegetation are factors involved in determining which size lance is most appropriate. The bottom end of the lance has gripping teeth and a spring loaded injection assembly. The EZJect Lance is prepared for use by loading it with pre-made capsules of herbicides encased in rim fired casings (*think 22 shell*). Capsules contain 2 different herbicides registered for use in California: Roundup (*Glyphosate*) and Garlon (*Triclopyr*), recently registered in June.

How to Use: The lance is operated by placing the gripping teeth at an angle against the trunk or stump, and thrusting forward (not throwing). The pushing force is focused into the capsule, driving it into the target species. *See product label for further directions in proper use of the EZ-Ject lance. A training tape is available from manufacturer upon request.*

Species Affected:

Woody species. EZ-Ject has been used in California by The Nature Conservancy, National Park Service, PG&E, and several cities in ditch bank maintenance, rights of way management, and invasive species control. Some common invasive species controlled include: tree of heaven, Chinese tallow tree, Brazilian pepper, tree of tobacco, Scotch broom, hemlock, Russioan olive, and tamarisk.

Advantages:

- Safe for operator use, closed application system
- Target species specific, leaving desired competitive species
- Can be used in almost any weather, except freezing conditions
- Convenient, no mixing or measuring, no containers to dispose.

Drawbacks:

- Difficult to use in densely overgrown areas
- Cost, the lance and herbicide capsules add up. Lance- $470; Capsules: $425/4,800 (Roundup), $425/4,800 (Garlon); Leasing ($100/lance) and lease-to-own options also exist.

Evidence/Efficacy:

Most research trials were conducted in deciduous and coniferous forests in Canada and compared the EZ-Ject lance to mechanical, cut surface, and hack and squirt techniques. Users in California report that this tool works well on most species, but species that are typically difficult to control by other means are still difficult to completely control and are often only suppressed. Contact the *Noxious Times* for a complete list of users in California who can relay their species specific results.

For more information, look for an EZ-Ject website to be up and running by the beginning of 2000, www.ezject.com *or contact Odom Processing at 1-888-395-6732.*

EZ-Ject®, a registered trademark of Monsanto Company (Canada), is manufactured and distributed under license by Odom

REQUEST FOR PROPOSALS: War On Weeds (WOW) Mini-Grant

The War on Weeds mini-grant initiative provides funding opportunities on a competitive basis for weed projects within California. A total of $15,000 has been made available by the BLM for 2000. ALL projects must provide at least a 1:1 match. In order of priority, this year's funding Priority Areas include:

√ Cooperative weed projects that involve a mix of Federal agencies, State & County agencies, non-profit groups, and private landowners (i.e. Weed Management Areas).

√ Educational projects that will have statewide benefits.

√ Research projects that will develop new technology or approaches that will be useful for on-the-ground projects.

Only proposals that are submitted or endorsed by one or more of the signatory agencies of the California Noxious Weed MOU (http://www.cdfa.ca.gov/CINWCC) will be considered. The proposal format is fairly informal, no application forms are needed. Describe the project and detail exactly how monies will be spent. Proposals should be brief and clear. Proposals should not exceed two pages in length.

WOW Grant Application Deadline: *February 20, 2000*

Send proposals to **Steve Schoenig**, California Department of Food & Agriculture, 1220 N St Room A357, Sacramento, CA 95814. For more information or to submit proposal electronically, send email to: sschoenig@cdfa.ca.gov.

CDFA Sponsors Statewide Weed Management Area Meeting

Preceding the fall California Exotic Pest Plant Council annual symposium, a statewide meeting of over sixty Weed Management Area* representatives and other interested individuals was held to discuss ways to coordinate efforts, highlight successes and benefits of WMAs, and plan for the upcoming year. Over the past two years, the number of WMAs in California has risen from six to a current total of thirty-two (in different stages of development). Over 50 counties are represented in these management groups. This meeting was the first attempt at pulling representatives together from across the state. Highlights from the meeting include:

- A presentation on the statewide view of WMAs, including history, benefits, cooperation, strategic organization and Assembly Bill 1168 funding.
- A panel discussion on WMA experiences and benefits. Panelists included: Marion Chambers (Tuolumne Ag Dept.), Suzanne Ebright (Plumas/Sierra County Ag Dept), Joanna Clines (Sierra National Forest), Butch Kreps (Calif. Dept of Food and Ag) and Barbra Mullin (Montana Ag Dept).
- A presentation on funding sources and grants for WMAs
- A discussion on the formation of regional clusters of WMAs for project coordination. Over the course of the next year, semi-annual regional meetings will be held with CDFA staff, WMA steering committees, and other interested parties.

**Weed Management Areas (WMAs) are local organization that bring together landowners and managers (private, city, county, State, and Federal) in a county, multi-county, or other geographical area to coordinate efforts and expertise against common invasive weeds species.*

California Weed Education and Awareness Workshop: Report and Follow-up Plans

Workshop Overview

A statewide workshop and brainstorming session, held on October 15th in Sacramento, explored the subject of noxious and invasive weed education and awareness programs in California. The session, sponsored by the California Interagency Noxious Weed Coordinating Committee (CINWCC) and the California Exotic Pest Plant Council (CalEPPC), drew over 100 attendees. The workshop, held in conjunction with the CalEPPC Symposium, reviewed existing weed education programs and identified ways to coordinate, share information, and avoid duplication of effort. The workshop program consisted of activity reports and short informational presentations by eleven different organizations and agencies that are involved in weed education. Presentations focused on existing education and awareness campaigns directed towards the general public, land owners, land managers, and Kindergarten-12th grade (K-12). Information sharing was continued into two breakout sessions of smaller groups. In the first breakout session, groups formed based on target audience/media type. With the intention of fostering local collaboration and mentoring, groups in the second session were split according to geographical regions.

The keynote speaker was Barbra Mullin from the Montana Department of Agriculture. Mrs. Mullin spoke enthusiastically about Montana's comprehensive and productive weed awareness program, which serves as a model for all western states. While Montana started their program with limited funding, one key to the continued success of the program was the development of a $1.5 million trust fund that awards grants to weed education and research projects.

Future Actions

A strong weed education and awareness campaign would bolstering existing weed prevention, control and eradication activities throughout the state. While the fall education meeting got the ball rolling, additional groundwork is required. As a follow-up to this initial statewide education workshop, coordinators (*Steve Schoenig and Carri Benefield, Calif. Dept. of Food and Agriculture*) will report to a number of weed groups (CINWCC, CalEPPC, California Native Plant Society, California Weed Science Society, etc.) in an effort to further explore the possibility of forming of a cross-organizational, weed awareness and education working group. Further, a meeting (*currently in the planning stages*) focused on further exploration towards a statewide K-12 weed education program is tentatively scheduled for February 3rd, 2000. *For more information about this K-12 education meeting contact Carri Benefield, cbenefield@cdfa.ca.gov.*

Interested in helping organize or participating in a cross-organizational, weed awareness and education working group contact Steve Schoenig, sschoenig@cdfa.ca.gov or Carri Benefield, cbenefield@cdfa.ca.gov.

Governor Davis Signs Assembly Bill 1168: A Weed Management Area Support Program

Assembly Bill 1168, legislation creating a Weed Management Area support program was signed by Governor Gray Davis on October 10, 1999. The bill creates a Noxious Weed Management Fund, managed by the California Department of Food and Agriculture. Annually, this fund will provide $30,000 for research and allocate $170,000 directly to local WMAs. A plan detailing how monies will be allocated is being drafted. During the first year, CDFA intends to distribute monies to a small set of WMAs based on their previous experience and abilities to immediately initiate pilot programs. Second and third year contracts will be based on cost-share proposals submitted from WMAs that desire further funding.

For more information on AB1168 see the WMA website, www.cdfa.ca.gov/wma/ab1168 or email Steve Schoenig of the California Department of Food and Agriculture, sschoenig@cdfa.ca.gov

Profile Weed Management in the and Resou

Resource Conservation Districts

Resource Conservation Districts (RCDs), once known as Soil Conservation Districts, are "special districts" of the State of California, set up under California law to be locally governed agencies with their own locally appointed or elected, boards of directors. RCDs provide the infrastructure to deliver conservation and watershed health programs to private landowners and local urban constituents. Although RCDs are established locally by the rules of a county's Local Agency Formation Committee (LAFCO), and often have close ties to county government, they are not county government entities. RCDs operate with annual budgets ranging from $0 to $500,000.

The close relationship between the RCDs and the US Department of Agriculture's Natural Resource Conservation Service has been longstanding. The NRCS was originally established to address the "Dust Bowl" crisis of the 1930's. The legislation to create conservation districts followed shortly. These districts are served by a statewide organization: the California Association of Resource Conservation Districts (CARCD), based in Sacramento. The NRCS appoints a District Conservationist to provide technical assistance, and acts as a liaison between the district and federal programs.

After the "Dust Bowl", hundreds of Soil Conservation Districts were formed throughout California to combat soil erosion. These districts were consolidated over the years into 103 RCDs across the State. CARCD's mission is to "enhance Resource Conservation Districts' effectiveness by offering unified representation and advocacy, by coordinating and supporting district activities, and by providing information, education, and training programs." *For more info on RCDs see their website http://ceres.ca.gov/carcd/index.htm or call (916) 447-7237.*

RCDs and Invasive Weeds

RCDs have become increasingly involved in the control of invasive and noxious weeds. The CARCD 1999-2003 Strategic Plan lists the following goals: "facilitate the restoration, enhancement and conservation of habitat for wildlife and fisheries" and to "maintain or enhance cropland productivity with minimal impact to the environment." An action item within the plan states: "Participate in Weed Management Areas and assist in the education about noxious and invasive species." RCDs have either spearheaded weed control projects or have been key participants in cooperative weed control programs. The following are examples of RCD participation in such projects.

Giant Reed (Arundo): Santa Maria River Management Plan – Cachuma RCD; Carlsbad Watershed Network - Greater San Diego RCD; Santa Margarita River Exotics Control Program – Murrieta-Anza & Misson RCD; San Jacinto Basin Arundo Removal – East Valley, San Jacinto Basin, Riverside/ Corona, Inland Empire West RCDs; Sonoma Creek Watershed Enhancement Plant – S. Sonoma RCD

Yellow Starthistle, Medusa-head: Transline and starthistle workshop - Yolo County RCD; Lower Inks Creek Medusahead Abatement – Tehama RCD, Mapping and Control – Tehatchapi RCD,

Tamarisk: Afton Canyon – Inyo, Mono RDC

Iceplant: Point Dume Iceplant Eradication - Santa Monica Mountains RCD

Multi-species Projects: Battle Creek Watershed Conservency – W. Shast & Tehama RCDs; Weed education brochure and workshops – Tulare RCD

e National Resource Conservation Service
urce Conservation Districts

The Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS), is the federal government agency that works hand-in-hand with the American people to conserve natural resources on private lands. Using scientific and technical expertise, and partnerships with soil and water conservation districts and others, they help people conserve all natural resources on private lands.

California State Office and District Conservationists

The NRCS State Office is located in Davis, and oversees 4 area offices in Red Bluff, Fresno, Salinas, and Riverside. The area offices provide administrative oversight to the 58 field offices (one in almost every county). District Conservationists and staff in each field office work very closely with local and state governments, as well as private landowners.

Field OfficeTechnical Guides

The agency has many technical manuals, but the Field Office Technical Guides (located in the field office) are probably the most important. These guides cover the lands contained in each field office boundary, and address conservation on nearly all land uses. They also provide resource inventory data, including soils and plants as well as conservation systems. When applied,

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Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP) was established in the 1996 Farm Bill to provide a single, voluntary conservation program for farmers and ranchers to address significant natural resource needs and objectives. Nationally, it provides technical, financial, and educational assistance. Typically 50% is targeted towards livestock-related natural resource problems and 50% towards more general conservation priorities.

EQIP works in priority areas where there are serious and critical environmental needs and concerns. High priority is given to areas where state or local governments offer financial or technical assistance and where agricultural improvements will help meet water quality and other environmental objectives. Not every county in California has an approved and funded Geographic Priority Area (GPA). Producers in counties which do not have an approved GPA may still be eligible for EQIP benefits if they have significant natural resource needs that are targeted through a Statewide program. All EQIP activities must be carried out according to a conservation plan. EQIP offers 5- to 10-year contracts that provide incentive payments and cost sharing for conservation practices needed at the site. Cost sharing may pay up to 75% of the costs of certain conservation practices, such as grassed waterways, filter strips, nutrient management facilities, air quality management, irrigation water management, and other practices important to improving and maintaining the health of natural resources in the area.

The USDA's Natural Resources Conservation Service (NRCS) provides leadership for EQIP, and works with USDA's Farm Service Agency (FSA) to administer the program's policies, priorities, and guidelines. California EQIP programs are broken into two major categories:
(1) CA EQIP Cost-Share and Technical Assistance Program http://www.ca.nrcs.usda.gov/rts/eqip1.html
(2) CA EQIP Educational Assistance Program http://www.ca.nrcs.usda.gov/eqip/index.html

Examples of EQIP (Education Assistance Program) grants for weed control:

Yuba/Sutter Noxious Weed Control Committee

Yuba County Resource Conservation District (RCD)- The purpose of this project is to develop a program to address the noxious weed problem in Yuba and Sutter Counties. Noxious weeds in this bi-county area are displacing native vegetation, reducing farm and ranch income, and increasing fuel loads (wildfire hazard). The first step is to organize a bi-county noxious weed control committee. These tw o counties have natural, economic and social ties that make combining efforts more efficient. Affected and interested organizations and agencies will make up the committee. Funds will be used to develop an effective information program, including forums, brochures, and a demonstration site.

Lassen County Weed Awareness Week

Honey Lake Valley Resource Conservation District (RCD)- The Honey Lake Valley Resource Conservation District (RCD) and Lassen County Noxious Weed SWAT (Special Weed Action Team) have sponsored a County Noxious Weed Awareness Week (See Noxious Times Vol. 2, No. 2, Fall 1999). Objectives of Noxious Weed awareness week were to: 1) inform the public about the noxious weed problem in Lassen County and across the nation, 2) teach people how to identify noxious weeds in the area, 3) discuss methods of controlling/ eradicating noxious weeds, 4) consider the cost of noxious weed control on private and public lands, and 5) the effects of noxious weeds to agricultural production, the environment and to wildlife.

For more information on EQIP call Anita Brown, (530) 792-5646

County Fair WEEDS Pavilion

By Suzanne Ebright, Plumas-Sierra Counties Agricultural Biologist

Suzanne Ebright and Karl Bishop show off the Plumas-Sierra Weed Managment Area educational outreach display at the county fair WEEDS pavilion.

The Plumas-Sierra *We Eradicate Exotic and Detrimental Species* Management Group (P.S. WEEDS) put together an impressive display to educate the public on noxious weed issues during the counties' annual fair this past summer. Organized and staffed by members of the group's 26 partners, the weed pavilion was open throughout the five day event which was attended by over 37,000 people.

Visitors to the weed pavilion were enticed to the open-air building by sixty-two large colorful display posters lining the walls. The visual exhibits included large photo enlargements of noxious weeds and identification labels, control methods with descriptions of biological, chemical, grazing, and mechanical techniques, information on "What is a noxious weed?", giant maps showing all county biological control agent release sites, as well as picture posters showing how weeds spread.

Upon entering the cool shade of the pavilion, visitors were encouraged to fill out a simple entry form for a free drawing to win a Weed Control Kit. The "kit" was composed of materials donated by P.S. WEEDS partners and included: a wheel barrel, hand pump sprayer, leather and neoprene gloves, safety glasses, shovel, hoe, "Weeds of the West" and "Selected Noxious Weeds of Northeastern California" field identification guides, "Wildflower Walking in the Lakes Basin Area" and "Sierra Nevada Flora" guides, heavy duty plastic bags for noxious weed disposal, and a hand held weed tool.

In one corner of the pavilion videos such as "Invasion in Slow Motion" and "A Kid's Journey to Noxious Weeds" were on continuous play for those captivated. An interactive noxious weed identification board was a highlight for many visitors who could test their weed knowledge. Live specimens of some of the two counties' weeds were on display as well as the counties' Ag Department's 20 gallon sprayer for loan. Brochures on noxious weed issues, identification, and control methods were handed out and questions were happily answered by the P.S. WEEDS partners staffing the pavilion. The noxious weed pavilion was a huge success and plans are already underway to make it even better for next year's Fair!

PROFILE *continued from page 11*

the conservation systems protect and sustain the land for continued use, based locally established criteria.

Lockford Plant Materials Center

The NRCS Lockeford Plant Materials Center, near Stockton, develops native and exotic plants for erosion control, re-vegetation and other beneficial uses. While many years ago the NRCS was responsible for providing conservation plan alternatives which included (in some cases) invasive exotics, the current staff is sensitive to the spread of invasive exotic plants and is providing solutions to the weed control community. They provide input to the field office technical guides.

The Lockeford Plant Materials Center is addressing the following resource issues:

- Development of cover crops, vegetative barriers, and windbreaks for controlling erosion on croplands
- Development of improved plants for wildlife food and cover
- Establishment of vegetation after wildfires
- Utilization of plants in disturbed areas, such as construction sites and mine spoils
- Establishment of vegetative strips to improve water quality along waterways
- Development of salt tolerant plant cultivars
- Utilization of native plants for ecosystem diversity
- Vegetative suppression of yellow starthistle and Medusa-head

For further information, see their website at: http://plant_materials._nrcs.usda.gov:90/scripts/_ndisapi.dll/_pmc/pgHome?PMC=CAPMC or contact them at (209)-727-5319.

Transline* Proving to be Valuable Tool

After two field seasons, Transline (clopyralid) is meeting (if not surpassing) initial control expectations and hype. The 1999 season was especially good with moderate rainfall timed well for excellent weed control. However, Transline's performance record is not flawless. In 1998, some failures were reported due to an extremely wet season and earlier applications. Inconsistencies have included: (1) reduced efficacy with treatments made under colder conditions at high elevations with little rainfall, (2) low rate applications made after the recommended early season timeframe, January to May 1st, and (3) mowing of grasses after a Transline application, but before rains have stopped (can result in a flush of seedling germination and subsequent reinfestation).

Impacts on other species

Good control has been reported on most composites (*namely*: bull thistle, milk thistle, Italian thistle, tarweed, and knapweeds), while Transline can be initially hard on legumes, particularly clover, burclover, some lupines, and vetch. It should be noted that legumes typically have hard seed coats and tend to rebound from the seed bank in future seasons. Oaks and other trees are not impacted, but elderberry is affected. Tim Baldwin, Range and Pasture Marketing Specialist with Dow AgroSciences, reports a 40-60% increase in palatable forage (primarily grasses), following a Transline application. However, in order to see a forage response, good forage must already be present. For instance, the presence of medusa-head, another aggressive rangeland invader, should be evaluated. Reports indicate that when medusa-head is present it has the potential to quickly reinfest fields in the absence of yellow starthistle (controlled with Transline). A successful management plan must take in to account all rangeland pests. Further, according to Vanelle Carrithers, Research Scientist with Dow AgroSciences, winter annual grasses have made a strong rebound in some areas treated with Transline. Combinations of grass herbicides with Transline are being used experimentally to encourage reestablishment of perennial grasses.

Soil Residual Activity

Residual activity does not exceed one growing season and depends on the time of

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Weed Free Forage Moves Toward a Reality in California

Hay, raw feeds and straw can contain germinable weed seeds if grown in fields where weeds are allowed to produce seeds or rhizomes. Noxious weeds can be spread into new areas by domesticated animals and mulches used for erosion control. Verifying that animal feed and mulch is weed free before it is used in an area can prevent the spread of weeds. Prevention programs are much simpler and cheaper than detection, control, or eradication programs for weeds that are already established.

As part of their national weed management strategy the Forest Service is working towards implementation of a weed-free forage and mulch program in all wilderness areas by the year 2002, and for all Forest Service lands by the year 2005. In California, the U.S Forest Service and the Bureau of Land Management began taking steps in 1998 toward closing their lands to all but weed-free forage and mulch. The first formal closure orders will take place after the Sierra Nevada Framework Project Environmental Impact Statement is finalized, sometime during the year 2000. The closure will be phased in for two years with education and voluntary compliance. It is expected that the other seven California national forests will follow suit, along with BLM and possibly other land management agencies such as the National Park Service and State Parks.

The California Agricultural Commissioners and Sealers Association (CACASA) formed a Weed Free Forage Subcommittee early in 1999 to develop and implement a weed free certification process which will comply with Weed Free Forage requirements on Federal Lands in the Sierra Nevada. Materials included in this program are: hay, straw, and mulch. The subcommittee has drafted procedures for certifying forage as "weed-free". Weed free is defined as being free of propagative parts of plants on the Noxious Weed list of the California Department of Food and Agriculture. A producer wanting the certification will apply with their local Agricultural Commissioner and then request an inspection within the 14 day period before harvest. Both the field and adjacent areas will be inspected for weeds. If the crop is found to be weed free, the producer will be given tags or twine to put on the bales for that crop. A reasonable fee will be charged for the certification. Finalization the certification program should happen at the Spring 2000 Conference of the California Agricultural Commissioners.

There has been some limited discussion with forage grower groups, California Cattlemen, and the Backcountry Horseman of California, but there is a need for greater input and participation. A public informational meeting to discuss Weed Free Forage implementation on public lands is scheduled for February 15, 2000 in Sacramento 2-5pm, *location to be determined*. This meeting will discuss agency plans for weed free regulations and get input from a broad spectrum of backcountry users and other citizens groups.

For more information about the Weed Free Forage Program, please contact: Karl Bishop, the Agricultural Commissioner for Plumas & Sierra Counties (530) 283-6365, or Joanna Clines of the U.S. Forest Service (916) 492-7563. For a list of CDFA Noxious Weeds, you can write to Dr. Fred Hrusa, CDFA Plant Pest Diagnostics Center, 3294 Meadowview Rd., Sacramento, CA 95832.

Yellow starthistle grows in field of baled hay.

Saltcedar Biological Control: An Update

By: Raymond Carruthers

The long awaited release of saltcedar (Tamarix spp.) natural enemies has finally taken place in California and several other western states. Although releases were not made until late in the field season, leaf beetles from China and Kazakhstan are now hunkering down for the upcoming winter inside of room-sized cages in California, Colorado, Nevada, Texas, Utah and Wyoming. For more details on the development of this program see Noxious Times Vol. 1, No. 4 (Spring 1999).

Late in July of this past year, USDA-APHIS in cooperation with the US Fish and Wildlife Service approved the release of the leaf beetle, Diorhabda elongata, into ten test areas in six states. The permits were approved following the publication of an Environmental Assessment, a public comment period and the issuance of a Finding of No Significant Impact. The releases were conducted within room sized field cages (some as large as 12 x 20 feet) so that beetle numbers could build up on natural Tamarix plants under the observation of the scientific teams evaluating their effectiveness. Once overwintering has been achieved and adequate numbers of beetles are available within the test sites, the beetles will be released into the open environment for further assessment. Detailed monitoring plans have been developed and are currently being implemented to characterize not only the population growth and impact of the beetles on saltcedar, but also to assess the impact of the biological control program on other vegetation and wildlife in the test areas.

To oversee these tests, a multi-agency Saltcedar Biological Control Consortium has been developed from a number of Federal, State and private groups all interested in the management of this invasive plant. Approximately 35 different groups are represented in the Consortium, which recently met in Albuquerque, New Mexico to assess this past season's activities and to plan activities for next year. The bottom line is that the leaf beetles did very well at most sites and now are expected to emerge next spring to resume the program. In California, approximately 500 beetles were released into each of two cages, one in the Owens Valley (Inyo County) and one on Fort Hunter Liggett (Monterey County). The releases were made by the USDA in conjunction with local cooperators and the County Agriculture Commissioners. Since the beetles were not released until late in the season (early to mid-August) their populations were not able to increase significantly, but should be in large enough numbers to increase rapidly next spring. In the Owens Valley, the beetles were monitored several times a week through a full generation with numerous adult beetles being produced by the season's end. The beetles all moved down from the saltcedar into the litter surrounding the plants where they are known to spend the winter. In October, the beetles were easily located in these overwintering sites. At Fort Hunter Liggett where the environmental conditions were extremely hot in August, the adult beetles fed on the saltcedar and then moved directly into overwintering sites without producing another generation. Their survival at this site is unknown but our expectations are high as these are conditions similar to the areas where the beetles are naturally found in Central Asia. At the test site in Colorado, (where USDA-APHIS gave permission for the beetles to be in this caged situation since last summer), approximately 150 beetles survived the winter, increased approximately 30 fold in a single generation, and caused extensive defoliation of the caged saltcedar at that site. We believe that each of our release sites in California have at least this number of overwintering beetles, and if they successfully survive the winter, will show similar levels of increase and impact on Tamarix next spring and summer. Project cooperators at each site will be watching closely to monitor beetle emergence in the spring (2000) and to determine their impact on saltcedar through the first full field season.

Raymond Carruthers is a Research Leader with the USDA-Agricultural Research Service, Western Regional Research Center, Exotic and Invasive Weed Research Unit in Albany, CA, ric@pw.usda.gov

Transline *continued from page 13*

year an application is made. Applied early in the season under cold weather conditions, Transline's soil residual will probably last about four months. If Transline is applied late in the season when the soil is warmer, two months residual can be expected. A second season of control is likely attributed to competing vegetation, preventing yellow starthistle germination and establishment. To maintain a weed free site, land managers are encouraged to fill old yellow starthistle spaces with desirable vegetation.

Integrated Approach

Initial concerns of reliance on Transline as the only tool, resulting in potential herbicide resistance does not seem likely. The cost of Transline alone is enough to encourage the development of an integrated management approach. Integration of Transline with follow-up chemical spot treatment, mechanical mowing, prescribed burning, grazing, biological control, and revegetation has been widely recommended in implementing multi-season yellow starthistle control plans.

Overall Performance

Successes are being reported across the state. According to Joe DiTomaso, UC Cooperative Extension Weed Specialist, "Overall, Transline is turning out to be a better tool for yellow starthistle control than I had expected. I thought there would be a higher percentage of failure, but Transline is looking superb." ❖

**Transline is a Trademark of Dow AgroSciences LLC. Transline is an herbicide that was registered for rangeland use in California, fall of 1997. The Noxious Times does not endorse products mentioned, rather strives to report findings that might be helpful for land managers across the State.*

Mitigation Banks continued from page 1

mitigation company, removed arundo from a stream bank as part of a habitat enhancement. The math of mitigation can be quite complicated depending on the specific impacts of a project. Sometimes an ecological feature like a vernal pool merits special consideration. In counties where open space is scarce or ecological stakes are high, combinations of both preservation and replacement are required for projects. In instances like these, the ratio of mitigation credits to impacted acres is more than 1:1.

Mitigation *banks* are areas where private companies and public agencies have done restoration or enhancement, and in some instances created habitat. Their work is credited as a whole by all the concerned agencies for a region. These credits are then sold to those that need them to offset impacts of their proposed projects.

HowWeed Control Fits In

As mentioned above, weed control by itself can be a form of mitigation. Additionally, agencies that regulate mitigation, like the Fish and Wildlife Service, can require a certain percent coverage of native plants as a success criteria for mitigation work. For example, in order to receive credits, a given area might have to be maintained with less than 10% coverage of non-native plants. Elimination of key weeds like broom or tamarisk can also be a requirement in order to get credits in a certain area.

As one example of how mitigation works, and how weed control fits into it: the California Department of Fish and Game (DFG) operates a 175 acre mitigation bank on the Santa Rosa Plain. The agency purchased the land from a developer who wanted to put a golf course on it. In order to re-coop the cost of buying the land, and to create an endowment that would allow them to purchase other important parcels, the DFG decided to maintain the land as a mitigation bank. The area contains some largely intact vernal pools with two endangered species: Burke's goldfields and Sebastapol meadowfoam. Because of the high quality of the area, the bank holds more preservation credits than acres.

To maintain the area, Harding grass had to be removed. An ecology class from Sonoma State University volunteered to remove the grass through a stewardship program. It took a group of 25 people one afternoon to remove between 0.5 - 1 acre of Harding grass which was scattered throughout the bank. A couple repetitions of this work should knock the weed back enough that only minor control efforts will be needed. Without this work, the grass could have spread and impacted the endangered species preserved in the bank.

In another example, Wildlands Inc. operates a mitigation bank for Chinook Salmon. After restoring the site, they needed to prevent water hyacinth from choking the area with vegetation in order to maintain habitat for the endangered salmon. A weir was installed to prevent hyacinth from entering the area.

Pros and Cons

Mitigation credits and banks are often very effective at reducing the net human impacts on ecosystems. The Army Corps of Engineers (COE) cites many benefits of mitigation banks including: the preservation of larger, more contiguous areas, greater levels of consistency and expertise in the work done; more intense and complete evaluation and monitoring of mitigation; and mitigation in advance of impact—resulting in less temporal loss of habitat. Additionally, mitigation sites are maintained in perpetuity, which is more than can be said for most private land.

With respect to weed control, many of these benefits can be seen directly. In a setting where two areas are equally surrounded by weeds, it is the larger one that will experience less encroachment. And it is definitely desirable to have an area that will have a continuing program for the monitoring and control of weeds.

On the other hand, some would argue that compensatory mitigation still allows loss or relocation of native habitat. Preserving a vernal pool somewhere else is not the same as not impacting or destroying the one on your property; and neither is transplanting the seed bank of that vernal pool to an off-site, constructed pool. Of the mitigation measures listed in the California Environmental Quality Act, the California Native Plant Society fully endorses only that of avoiding the impact. Measures to minimize, to rectify, or to reduce or eliminate the impact over time are recognized by the Society as partial mitigation. The Society treats off-site compensation as mitigation of last resort.

Another issue concerning mitigation and weed control is the concept that Craig Denisoff of Wildlands Inc. calls "defensible space". In order for a private company or public agency to take on an area as a mitigation bank, they need to be able to restore and then maintain it. They must charge their client enough to cover the restoration/creation work and the endowment needed to maintain it; and that price has to be one that clients are willing to pay. This means that sites that will continue to require intense work over a long period are less desirable as mitigation sites. For example, a stream bank with 10 years of tamarisk seeds in the soil is not attractive.

Opportunities

The Big Sur Weed Management Area (BSWMA) succeeded in getting a grant (called the Environmental Enhancement and Mitigation Program Grant) through the California State Resource Agency. CalTRANS needed mitigation credits for earthquake retrofitting work they were doing on Route One's bridges. As an agency involved in the BSWMA, they brought the idea to the group. Vera Jigour, a very dedicated volunteer, coordinated writing the grant. Now the many agencies involved in the BSWMA (like the Forest Service and State Parks) will use the funds to do weed removal in their jurisdictional space.

It is possible for local organizations to partner with governmental agencies or private companies in mitigation to help with weed control. This can help a governmental agency reduce costs, and use money from the sale of credits to preserve other land (like in the case of DFG's Kramer Mitigation Bank). This can also make it possible for a private company to take on mitigation in areas they might otherwise avoid. ❖

For more information about mitigation in your county, call your local USFWS, COE, or DFG offices.

This article was written by Rosie Yacoub, a new member of the Noxious Times Editorial staff.

Upcoming Events:

January 10,11, & 12, 2000
Weed Management in the 21st Century: Opportunities and Challenges
The 52nd Annual Conference of the California Weed Science Society will be held at the DoubleTree Hotel in Sacramento, California. *For more information, contact: Tome (559) 675-7879, ext. 213*

February 7-10, 2000
40th Annual Meeting of the Weed Science Society of America
A special invitation is extended to you to participate in the 40th Annual Meeting of the Weed Science Society of America. Our first meeting in the 21st century will be held in Toronto, Canada at The Westin Harbour Castle Hotel on the harbor front of Lake Ontario. *The entire program is posted on the WSSA Web Site at http://ext.agn.uiuc.edu/wssa/*

February 7-11, 2000
Working at a Watershed Level
Cal State University Stanislaus, Turlock
Working at a Watershed Level is designed as an introductory level basic training program for watershed group coordinators and members, agency staff, consultants, and others addressing watershed issues. The course covers the principles of watershed ecology, system dynamics, assessment and analysis, planning methodologies, restoration/management approaches, public involvement strategies and outreach program development. Field trips are planned for Wednesday and Thursday afternoons; a reception and group dinner outing are also scheduled during the week.
For more information, contact: Ashley Griffin, CSU Stanislaus Foundation, (209) 667-3062, agriffin@stan.csustan.edu.

February 23-25 & Feb 28-March 1, 2000
Weed Science School
The Weed Science School is an intensive three day course focusing on the mode and mechanism of herbicide activity in plants and the fate of herbicides in the environment. The course covers (in a lecture format) herbicide selectivity, resistance and additives. Weed biology, ecology and seed bank dynamics are also covered. Laboratory activities focus on recognition of herbicide symptoms and broadleaf and grass weed identification. *For more information contact: Nancy Muller, muller@vegmail.ucdavis.edu (530) 752-7091*

March 14-16, 2000
Western Society of Weed Science Annual Meeting
For information about this meeting or about WSWS, contact: Wanda Graves, Business Manager Western Society of Weed Science (510) 790-1252.

April 3, 2000
Managing California Watersheds: A Statewide Conference
University Extension is currently developing the third one-day conference providing an overview of the status on current watershed planning and management efforts throughout the state. Leading experts will profile the latest watershed planning and management tools, as well as cutting-edge techniques and unique solutions. *For more information, contact: Land Use and Natural Resources office (530) 757-8878.*

View the latest newsletter at the NEW *Noxious Times* website BEFORE it arrives in your mailbox!
www.cdfa.ca.gov/noxioustimes

Also in 2000…

Endangered Species in California Conference
For information on this conference, please contact the Land Use and Natural Resources office at (530) 757-8878 or email lunrinfo@unexmail.ucdavis.edu

July 16-20, 2000
California Conference on Biological Control
Meeting topics include: Biological control as a component of integrated pest management systems, ecological benefits and risks of classical biological control, plant biodiversity and the enhancement of biological control agents, mass production of natural enemies: taxonomy, quality control, release strategies, and issues relating to genetics. *For more information, contact: ccbc2@cnas.ucr.edu (909) 787-7292.*

California Interagency Noxious Weed Coordinating Committee
Noxious Times
1220 N Street, Room A-357
Sacramento, CA 95814

return services requested

Where to Have Weeds Indentified continued from page 3

Tips/Protocol involved in collecting and sending in a plant for identification

General Collecting Hints

Collect as many plant parts as possible- lower, middle, and upper plant sections- both above and below ground parts- leaves, branches, roots, stems and branches with flowers and fruits

Tools

Plant press, clippers, digging tool, ziplock bags, waterproof field notebook, and pencil. *GPS to give exact location data- helpful but not required

Data sheet should include these 7 KEY components:

1. Collector's name.
2. Unique identifier. Each plant that is collected should have a unique identification number that can be used in communications about the plant.
3. Date collected.
4. Exact [Approximate] location in words, giving road distance (using your odometer) or "as the crow flies" distance (using a map) from a major landmark or road intersection. Be as specific as possible. Rather than using a term such as "near", use the terms "west of", "south of", etc.
5. GPS data, latitude/longitude, or township range.
6. Description of the habitat where collected, such as "levee bank", "yellow-pine forest"
7. Description of the plant as it looked when collected, including whether it is an annual or perennial, flower color, height, smell, and any other information that will help in the identification process.

General Pressing Hints

- Use one half of an open page of standard newspaper; fold that sheet in half to create a rectangle that is approx. 11x13''. Write the unique identifier of the plant on the newspaper margin.
- Clip or bend the plant specimen, so that it fits into the 11 x 13 " space of the folded newspaper sheet — use several newspapers, if necessary, to accommodate all of the plant material. If more than one newspaper is used, write the unique identifier on each newspaper as well as some indication that there is more than one sheet of material (for example "1 of 3, 2 of 3, 3 of 3").
- Place data sheet in with specimen.
- Place specimen in a plant press and pull straps tightly.
- Dry specimens in warm or well-ventilated place. A warm car will do, or you can place the press next to a house fan.

Professional Botanist

Intermountain Flora - excellent line drawings - various authors
Illustrated Flora of the Pacific States - line drawings - Abrams and Ferris
Flora Europaea - Heywood et al
A Flora of the Marshes of California- excellent line drawings - Mason
A Flora of California (and supplement) - Munz & Keck
Jepson Manual - Higher Plants of California - Hickman, ed. - line drawings
Vascular Plants of the Pacific Northwest -excellent line drawings-C.L. Hitchcock, Cronquist, Ownbey, Thompson
Arizona Flora- Kearney and Peebles
A Southern California Flora - Munz
Gray's Manual - Fernald
Manual of the Grasses of the United States - line drawings- A.S. Hitchcock
Manual of Cultivated Plants - L.H. Bailey

continued on next page

More Resource Guides

Local Floral Guides

Local county floras or regional floras are useful as long as they aren't just a checklist. The following are particularly good, but note that all lack technical descriptions of the taxa.

Marin Flora -J.T. Howell
Vascular Plants of San Luis Obispo County - Hoover
A Flora of San Diego County, California - Beauchamp
Flowering Plants of Monterey County - line drawings - Matthews
A Flora of the Santa Cruz Mountains of California- Thomas
A Flora of Sonoma County - Best, Wells, Knight, Howell
Manual of the Vascular Plants of Butte County - Oswald, Ahart
Flora of Kern County, California - Twisselmann, (with keys added by Maynard Moe)
A Flora of the Trinity Alps - Ferlatte
A Flora of the White Mountains, California and Nevada - Lloyd, Mitchell
A Sierra Nevada Flora - Weedon (does not identify all groups to species rank).

Data Sheet for Plant Collections

COLLECTOR:_____ **NUMBER:**_____

DATE:_____

IDENTIFICATION:

Family_____

Genus_____ Specific Epithet_____

Author_____

Subspecific category_____ Subspecific Epithet_____

Subspecific Author_____

LOCATION (IN U.S.A.):

State_____ County_____

Township/Range: T_____ R_____ Sect._____, _____ ¼
Quadrangle Map:_____
or
Latitude/Longitude: _____°, _____', _____" N; _____°, _____', _____" W or E

Exact Location in words, giving "road distance" (using your odometer) or "as the crow flies distance" (using a map) from a major landmark or road intersection. Be as specific as possible. Rather than using a term such as "near", use the terms "west of, south of", etc:

_____

_____

HABITAT: Give information such as slope, aspect, soil type, plant community type, dominant plant species, associated species, moisture level, light level:

_____

_____

PLANT DESCRIPTION: Give information such as abundance, flower color, pollinator type, plant height, habit, life form (annual or perennial herb, shrub, etc)

_____